THE IDENTITY OF *ARACHNOPHYLLUM DELILEI* MONTAGNE

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ABSTRACT - The holotype in PC of *Arachnophyllum delilei* Montagne [= *Bangia delilei* (Montagne) Zanardini] from the Red Sea is identified as *Percursaria percusa* (C. Agardh) Bory. Therefore, this binomial is relegated to taxonomic synonymy within the latter taxon.

RÉSUMÉ - L'holotype (in PC) de *Arachnophyllum delilei* Montagne [= *Bangia delilei* (Montagne) Zanardini] de la Mer Rouge est à rapporter au *Percursaria percusa* (C. Agardh) Bory. Par conséquent ce binôme est relégué à une synonymie taxinomique du dernier taxon.

KEY WORDS : *Arachnophyllum delilei, Bangia delilei, Percursaria percusa*, Red Sea.

INTRODUCTION

Arachnophyllum delilei was described by Montagne (1857) on the basis of a Delile collection from the Red Sea. *Arachnophyllum* Zanardini (1843), the genus of Delesseriaceae (Rhodophyta) to which it was assigned, is rather poorly known, its generitype, *A. confervaceum* (Meneghini) Zanardini, being restricted to the Mediterranean Sea (Hauck, 1883-1885; Funk, 1955). Zanardini (1858) transferred *A. delilei* to a very different rhodophytan genus, *Bangia*, where it still remained in Papenfuss' (1968) Catalogue of Red Sea marine algae. Papenfuss stated that the systematic position and status of this taxon were "uncertain". De Toni (1900), who had retained the taxon in *Arachnophyllum*, also characterized it as a "Species inquirendae". An examination of type material of *Arachnophyllum delilei* in PC has permitted the resolution of the questionable status of this alga.

OBSERVATIONS

The single herbarium sheet in PC comprising the type collection of *Arachnophyllum delilei* has a total of five packets of various sizes. Several labels written in the hand of Montagne provide the pertinent data authenticating it as the type collection: "Arachnophyllum Delilei Mont.", "8e Centurie",

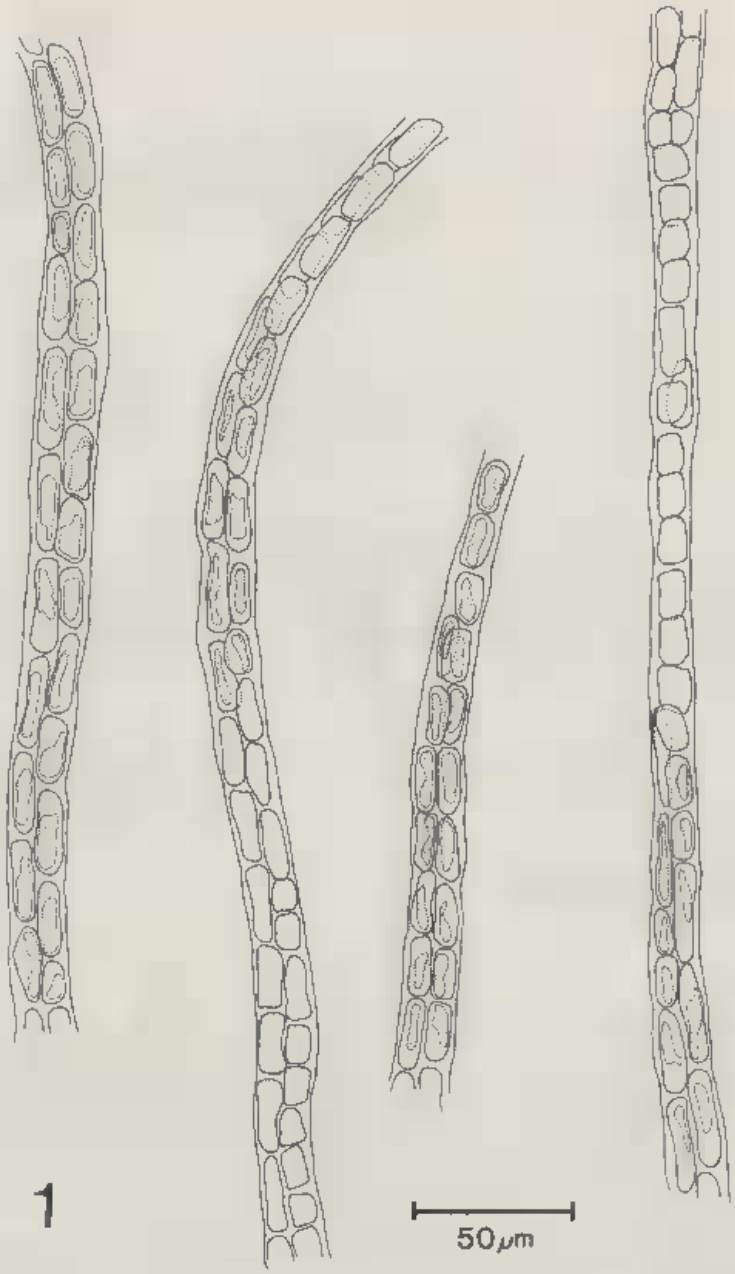

Fig. 1 - *Arachnophyllum delilei* Montagne [= *Percursaria percusa*]. Camera-lucida drawings of filaments in type collection (PC).

"in mari rubro", "M. Delile no. 2", and the date "1844". The names "Polycladia Commersonii Montg." and "Amphiroa fragilissima Lamx." correspond to two of the three hosts referred to by Montagne. In the packets are a few mounts of the host algae covered with a dense covering of filamentous algae. Montagne's account mentioned his new species enveloped the host algae with a thick tomentum. In the packets there is also a total of 14 mica mounts with additional tufts of *Arachnophyllum*. Hosts and epiphyte(s) are

all bleached and colorless, as was their condition when Montagne first described this alga. The filaments, when examined under the microscope, were seen to be mostly simple, biseriate filaments, usually 16-19 μm wide, occasionally and sporadically uniseriate (11-12 μm wide). Branching was not observed, nor were any reproductive structures. Rhizoidal cells were not present. Staining with aniline blue and with IKI revealed a single platelike chloroplast in each cell. The state of preservation of the material does not permit one to detect with certainty the presence of pyrenoids. These observations are in full agreement with the protologue.

The biseriate simple filaments of this material allow it to be identified as the green alga *Percursaria percusa* (C. Agardh) Bory. Morphological and life histories of this alga have been reported by Kornmann (1956) and Bliding (1963). The absence of rhizoids is compatible with Bliding's (1968) characterization of the monotypic family Percursariaceae as having no rhizoidal cells. Zanardini's (1858) transfer of this taxon to *Bangia* is incorrect in that a rhizoidal basal system is present in the Bangiales (Garbary *et al.*, 1980).

DISCUSSION

In Montagne's (1857) description of *Arachnophyllum delilei* he admitted that he had substantial difficulties in assigning this alga to a group, not certain whether it should be assigned to the Confervas (filamentous green alga) or the Florideae (red algae). He indicated that he re-examined it several times. It is important to point out that he did not detect any reproductive structures, saying that "l'absence de fructification... est fort à regretter".

Montagne was persuaded by some resemblance of his alga to Zanardini's *Arachnophyllum confervaceum* from the Adriatic Sea to assign the Red Sea alga of the same genus. Vegetative cells of *Arachnophyllum confervaceum* have been shown by Funk (1955) to contain many very small rhodoplasts arranged in bead-like chains, typical for most members of the Delesseriaceae. The single platelike chloroplast present in *Arachnophyllum delilei* is in agreement with the cytology of *Percursaria percusa* (Bliding, 1963).

Kützing (1866) received material of this alga from Montagne and, apparently unaware that Montagne had already described the alga, also provided a description, crediting the entry as "Arachnophyllum Delilei *(Montagne in litt.)*". Kützing depicted the alga as comprised of simple biseriate filaments with "sporis (?) simplicibus globosis lateralibus sessilibus (raris)". Such external spores or sporangia are foreign to *Percursaria*. Rather, there is a simple conversion of vegetative cells into zoospores or gametes, which are released without any dramatic alteration to the cell. It is concluded that the "sporis (?)" referred to by Kützing should be disregarded.

The distribution of *P. percusa* is now recognized to be cosmopolitan: both sides of the North Atlantic (South & Titley, 1986; Wynne, 1986), the Pacific coast of North America from British Columbia to central California (Abbott & Hollenberg, 1976; Scagel *et al.*, 1989), Japan (Yoshida *et al.*, 1990) and the Soviet Union (Zinova, 1967; Vinogradova, 1979), South Africa (Seagrief, 1984) and Australia (Womersley, 1984). De Toni (1889, as *Entero-*

morpha percusa) compiled a lengthy list of taxonomic and nomenclatural synonyms for *Percursaria percusa*. Papenfuss (1960) summarized the evidence for the recognition of *Percursaria* as distinct from *Enteromorpha*. The fact that Kützing (1850-1852) depicted the alga under four different names (*Schizogonium percursum*, *S. nodosum*, *S. pallidum*, and *S. virescens*) on the same plate reflects the past confusion regarding this alga.

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